



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NATIONAL EXPOSURE RESEARCH LABORATORY

HUMAN EXPOSURE & ATMOSPHERIC SCIENCES DIVISION (MD-D205-03)

Research Triangle Park, NC 27711

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Office of  
Research and Development

## LIST OF DESIGNATED REFERENCE AND EQUIVALENT METHODS

**Issue Date: September 12, 2002**

([www.epa.gov/ttn/amtic/criteria.html](http://www.epa.gov/ttn/amtic/criteria.html))

These methods for measuring ambient concentrations of specified air pollutants have been designated as "reference methods" or "equivalent methods" in accordance with Title 40, Part 53 of the Code of Federal Regulations (40 CFR Part 53). Subject to any limitations (e.g., operating range or temperature range) specified in the applicable designation, each method is acceptable for use in state or local air quality surveillance systems under 40 CFR Part 58 unless the applicable designation is subsequently canceled. Automated methods for pollutants other than PM<sub>10</sub> are acceptable for use only at shelter temperatures between 20°C and 30°C and line voltages between 105 and 125 volts unless wider limits are specified in the method description.

Prospective users of the methods listed should note (1) that each method must be used in strict accordance with its associated operation or instruction manual and with applicable quality assurance procedures, and (2) that modification of a method by its vendor or user may cause the pertinent designation to be inapplicable to the method as modified. (See Section 2.8 of Appendix C, 40 CFR Part 58 for approval of modifications to any of these methods by users.)

Further information concerning particular designations may be found in the *Federal Register* notice cited for each method or by writing to the National Exposure Research Laboratory, Human Exposure and Atmospheric Sciences Division (MD-46), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. Technical information concerning the methods should be obtained by contacting the source listed for each method. Source addresses are listed at the end of the listing of methods, except for the addresses for lead method sources, which are given with the method. New analyzers or PM<sub>10</sub> samplers sold as reference or equivalent methods must carry a label or sticker identifying them as designated methods. For analyzers or PM<sub>10</sub> samplers sold prior to the designation of a method with the same or similar model number, the model number does not necessarily identify an analyzer or sampler as a designated method. Consult the manufacturer or seller to determine if a previously sold analyzer or sampler can be considered a designated method or if it can be upgraded to designation status. Analyzer users who experience operational or other difficulties with a designated analyzer or sampler and are unable to resolve the problem directly with the instrument manufacturer may contact EPA (preferably in writing) at the above address for assistance.

This list will be revised as necessary to reflect any new designations or any cancellation of a designation currently in effect. The most current revision of the list will be available for inspection at EPA's Regional Offices, and copies may be obtained at the Internet site identified above or by writing to the National Exposure Research Laboratory at the address specified above.

### Most Recent Designations

Tisch Environmental Model TE-6070 PM <sub>10</sub> High Volume Sampler	April 02, 2002
BGI Models PQ200-VSCC and PQ200A-VSCC PM <sub>2.5</sub> Sampler	April 02, 2002
R & P Partisol®-FRM Model 2000 PM-2.5 FEM PM <sub>2.5</sub> Sampler	April 02, 2002
R & P Partisol® Model 2000 PM-2.5 FEM PM <sub>2.5</sub> Audit Sampler	April 02, 2002
R & P Partisol®-Plus Model 2025 PM-2.5 FEM PM <sub>2.5</sub> Seq. Sampler	April 02, 2002
Environnement S.A Model AC32M Nitrogen Oxides Analyzer	April 02, 2002
Environnement S.A Model CO12M Carbon Monoxide Analyzer	June 24, 2002
Environnement S.A Model O <sub>3</sub> 42M Ozone Analyzer	June 24, 2002
Environnement S.A Model AF22M Sulfur Dioxide Analyzer	Sept. 12, 2002
Teledyne - Advanced Pollution Instrumentation Model 400E O <sub>3</sub> Analyzer	Sept. 12, 2002

**CARBON MONOXIDE****Beckman Model 866 CO Monitoring System***Automated Reference Method: RFCA-0876-012*

"Beckman Model 866 Ambient CO Monitoring System," consisting of the following components:

Pump/Sample-Handling Module; Gas Control Panel; Model 865-17 Analyzer Unit; Automatic Zero/Span Standardizer; operated with a 0-50 ppm range, a 13 second electronic response time, with or without any of the following options: Current Output Feature; Bench Mounting Kit; Linearizer Circuit.

[*Federal Register*: Vol. 41, page 36245, 08/27/76]

**Bendix/Combustion Engineering Model 8501-5CA CO Analyzer***Automated Reference Method: RFCA-0276-008*

"Bendix or Combustion Engineering Model 8501-5CA Infrared CO Analyzer", operated on the 0-50 ppm range and with a time constant setting between 5 and 16 seconds, with or without any of the following options: Rack Mounting With Chassis Slides; Rack Mounting Without Chassis Slides; External Sample Pump.

[*Federal Register*: Vol. 41, page 7450, 02/18/76]

**Dasibi Model 3003 CO Analyzer***Automated Reference Method: RFCA-0381-051*

"Dasibi Model 3003 Gas Filter Correlation Dasibi Environmental CO Analyzer," operated on the 0-50 ppm range, with a sample particulate filter installed on the sample inlet line, with or without any of the following options:

3-001 Rack Mount                    3-003 BCD Digital Output

3-007 Zero/Span Module Panel

3-002 Remote Zero And Span    3-004 4-20 Milliamp Output

[*Federal Register*: Vol. 46, page 20773, 04/07/81]

**Dasibi Model 3008 CO Analyzer***Automated Reference Method: RFCA-0488-067*

"Dasibi Model 3008 Gas Filter Correlation CO Analyzer," operated on the 0-50 ppm range, with a time constant setting of 60 seconds, a particulate filter installed in the analyzer sample inlet line, with or without use of the auto zero or auto zero/span feature, and with or without any of the following options: N-0056-A RS-232-C Interface; S-0132-A Rack Mounting Slides; Z-0176-S Rack Mounting Brackets.

[*Federal Register*: Vol. 53, page 12073, 04/12/88]

**Environnement S.A. Model CO11M CO Analyzer***Automated Reference Method: RFCA-0995-108*

"Environnement S.A. Model CO11M Ambient Carbon Monoxide Analyzer," operated on a full scale range of 0 - 50 ppm, at any temperature in the range of 15 °C to 35 °C, with a 5-micron PTFE sample particulate filter, with the following software settings: Automatic response time ON; Minimum response time set to 40 seconds (RT 13); Automatic ZERO-REF cycle programmed every 24 hours; and with or without any of the following options: <sup>2</sup> RS232-422 Serial Interface; Internal Printer.

[*Federal Register*: Vol. 60, page 54684, 10/25/95]

**Environnement S.A. Model CO12M CO Analyzer***Automated Reference Method: RFCA-0206-147*

"Environnement S.A Model CO12M Gas Filter Correlation Carbon Monoxide Analyzer," operated with a full scale range of 0 - 50 ppm, at any temperature in the range of 10 °C to 35 °C, with a 5-micron PTFE sample particulate filter, with response time ON, and with the automatic "ZERO-REF" cycle either ON or OFF.<sup>2</sup>

[*Federal Register*: Vol. 67, page 42557, 06/24/02]

**Horiba Models AQM-10, AQM-11, and AQM12 CO Monitoring Systems***Automated Reference Method: RFCA-1278-033*

"Horiba Models AQM-10, AQM-11, and AQM12 Ambient CO Monitoring Systems," operated on the 0-50 ppm range, with a response time setting of 15.5 seconds, with or without any of the following options: AIC-101 Automatic Indication Corrector; VIT-3 Non-Isolated Current Output; ISO-2 And DCS-3 Isolated Current Output.

[*Federal Register*: Vol. 43, page 58429, 12/14/78]

**Horiba Model APMA-300E CO Monitoring System***Automated Reference Method: RFCA-1180-048*

"Horiba Model APMA-300E Ambient Carbon Monoxide Monitoring System," operated on the 0-20 ppm<sup>1</sup>, the 0-50 ppm, or the 0-100 ppm range with a time constant switch setting of No. 5. The monitoring system may be

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operated at temperatures between 10°C and 40°C. (This method was originally designated as "Horiba Model APMA 300E/300SE Ambient Carbon Monoxide Monitoring System".)

[*Federal Register*: Vol. 45, page 72774, 11/03/80]

## **Horiba Model APMA-360 CO Monitor**

*Automated Reference Method: RFCA-0895-106*

"Horiba Instruments Incorporated, Model APMA-360 Ambient Carbon Monoxide Monitor," operated on the 0-50 ppm range, with the Line Setting set to "MEASURE", with the Analog Output set to "MOMENTARY VALUE", and with or without the following options:<sup>2</sup> 1) Rack Mounting Plate and Side Rails 2) RS-232 Com Port.

[*Federal Register*: Vol. 60, page 39382, 08/02/95]

## **MASS-CO, Model 1 CO Analyzer**

*Automated Reference Method: RFCA-1280-050*

"MASS-CO, Model 1 Carbon Monoxide Analyzer," operated on a range of 0-50 ppm, with automatic zero and span adjustments at time intervals not to exceed 4 hours, with or without the 100 millivolt and 5 volt output options. The method consists of the following components: (1) Infra-2 (Uras 2) Infrared Analyzer Model 5611-200-35, (2) Automatic Calibrator Model 5869-111, (3) Electric Gas Cooler Model 7865-222 or equivalent with prehumidifier, (4) Diaphragm Pump Model 5861-214 or equivalent, (5) Membrane Filter Model 5862-111 or equivalent, (6) Flow Meter Model SK 1171-U or equivalent, (7) Recorder Model Mini Comp DN 1/192 or equivalent. NOTE: This method is not now commercially available.

[*Federal Register*: Vol. 45, page 81650, 12/11/80]

## **Monitor Labs Model 8310 CO Analyzer**

*Automated Reference Method: RFCA-0979-041*

"Monitor Labs Model 8310 CO Analyzer," operated on the 0-50 ppm range, with a sample inlet filter, with or without any of the following options:

02A Zero/Span Valves	04B Pump (50 Hz)	07A Zero/Span Valve Power Supply
03A Floor Stand	05A CO Regulator	08A Calibration Valves
04A Pump (60 Hz)	06A CO Cylinder	9A,B,C,D Input Power Transformer

[*Federal Register*: Vol. 44, page 54545, 09/20/79 and Vol. 45, page 2700, 01/14/80]

## **Monitor Labs/Lear Siegler Model 8830 CO Analyzer**

*Automated Reference Method: RFCA-0388-066*

"Monitor Labs or Lear Siegler Model 8830 CO Analyzer," operated on the 0-50 ppm range, with a five micron Teflon filter element installed in the rear-panel filter assembly, with or without any of the following options: 2 - Zero/Span Valve Assembly; 3 - Rack Assembly; 4 - Slide Assembly; 7 - 230 VAC, 50/60 Hz.

[*Federal Register*: Vol. 53, page 7233, 03/07/88]

## **Monitor Labs/Lear Siegler Model ML9830,**

*Automated Reference Method: RFCA-0992-088*

## **Monitor Labs Model ML9830B, or Wedding & Associates Model 1020 CO Analyzers**

"Lear Siegler Measurement Controls Corporation or Monitor Labs Model ML9830, Monitor Labs Model ML9830B, or Wedding & Associates, Inc. Model 1020 Carbon Monoxide Analyzer," operated on any full scale range between 0-5.0 ppm<sup>1</sup> and 0-100 ppm, at any temperature in the range of 15°C to 35°C, with the service switch on the secondary panel set to the *In* position, with the following menu choices selected: Range: *5.0 ppm to 100.0 ppm*; Over-ranging: *Enabled* or *Disabled*; Background: *Not Disabled*; Calibration: *Manual* or *Timed*; Diagnostic Mode: *Operate*; Filter Type: *Kalman*; Pres/Temp/Flow Comp: *On*; Span Comp: *Disabled*; and as follows: **Model**

**ML9830:** with a five-micron Teflon® filter element installed internally, with the 50-pin I/O board installed on the rear panel configured at any of the following output range settings: Voltage, 0.1 V, 1 V, 5 V, 10 V; Current, 0-20 mA, 2-20 mA and 4-20 mA; and with or without any of the following options: Valve Assembly for External Zero/Span (EZS); Valve Assembly for Internal Zero/Span (IZS); Rack Mount Assembly; Internal Floppy Disk Drive. **Models ML9830B and 1020:** with either a vendor-supplied or equivalent user-supplied five micron Teflon® filter and exhaust pump, and with or without any of the following options: Valve Assembly for External Zero/Span (EZS); 50-pin I/O board; Rack Mount Assembly; High Pressure Span Valve; hinged, fold-down front panel.

[*Federal Register*: Vol. 57, page 44565, 09/28/92]

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## MSA/LIRA Model 202S CO Analyzer System

*Automated Reference Method: RFCA-0177-018*

"LIRA Model 202S Air Quality Carbon Monoxide Analyzer System," consisting of a LIRA Model 202S optical bench (P/N 459839), a regenerative dryer (P/N 464084), and rack-mounted sampling system; operated on a 0-50 ppm range, with the slow response amplifier, with or without any of the following options: Remote Meter; Remote Zero And Span Controls; 0-1, 5, 20, Or 50 mA Output; 1-5, 4-20, Or 10-50 mA Output; 0-10 Or 100 mV Output; 0-1, 5, Or 10 Volt Output.

[*Federal Register*: Vol. 42, page 5748, 01/31/77]

## Teledyne Advanced Pollution Instrumentation, Inc. Models 300 or 300E

*Automated Reference Method: RFCA-1093-093*

"Teledyne Advanced Pollution Instrumentation, Inc. Models 300 or 300E Gas Filter Correlation Carbon Monoxide Analyzer," operated on any full scale range between 0-10 ppm and 0-50 ppm, at any temperature in the range of 15°C to 35°C for **Model 300** or 10°C to 40°C for **Model 300E**, with a 5-micron TFE filter element installed in the filter assembly, with the dynamic zero and span adjustment set to *Off* for **Model 300**, and with or without any of the following options<sup>2</sup>: Option 50, Zero/Span Valves with pressurized span gas and shutoff valve; Option 51, Zero/Span Valves with pressurized span gas and shutoff valve and Internal Zero Air Generator; Option 52, Zero/Span Valves; Option 53, Zero/Span Valves with Internal Zero Air Generator; Rack Mount with slides; RS-232 serial port with status outputs; and (for **Model 300E**) 4-20 mA isolated outputs.

[*Federal Register*: Vol. 58, page 58166, 10/29/93]

## Thermo Electron/Thermo Environmental Instruments Models 48, 48C

*Automated Reference Method: RFCA-0981-054*

"Thermo Electron or Thermo Environmental Instruments, Inc. Model 48 Gas Filter Correlation Ambient CO Analyzer," operated on the 0-50 ppm range, with a time constant setting of 30 seconds, with or without any of the following options:

48-001	Teflon Particulate Filter	48-010	Internal Zero Air Package
48-002	19 Inch Rack Mount	48-488	GPIB (General Purpose Interface Bus) EEEE-488
48-003	Internal Zero/Span Valves with Remote Activation		

"Thermo Electron or Thermo Environmental Instruments, Inc. Model 48C Gas Filter Correlation Ambient CO Analyzer," operated on any measurement range between 0-1 ppm<sup>1</sup> and 0-100 ppm, with any time average setting from 10 to 300 seconds, with temperature and/or pressure compensation on or off, operated at temperatures between 20 °C and 30 °C, with or without any of the following options:<sup>2</sup>

100	Teflon particulate filter	410	Internal Zero Air Scrubber
200	Carrying Handle	610	4-20 mA current output
210	Rack mounts	720	RS-232 Interface
320	Internal Zero/Span and Sample/Calibration Solenoid Valves	770	RS-485 Interface
330	Internal Zero/Span and Sample/ Calibration Solenoid Valves with Remote I/O Activation		

[*Federal Register*: Vol. 46, page 47002, 09/23/81]

## NOTES

<sup>1</sup> Users should be aware that designation of this analyzer for operation on ranges less than the range specified in the performance specifications for this analyzer (40 CFR 53, Subpart B) is based on meeting the same absolute performance specifications required for the specified range. Thus, designation of these lower ranges does not imply commensurably better performance than that obtained on the specified range.

<sup>2</sup> This analyzer is approved for use, with proper factory configuration, on either 50 or 60 Hertz line frequency and nominal power line voltages of 115 Vac and 230 Vac.

## Sources or Contacts for Designated Reference and Equivalent Methods

ABB Process Analytics P.O. Box 831 Lewisburg, WV 24901 (304) 647-4358	Graseby GMW [Refer to Andersen Instruments]	81-3(3822)2272 TTani@email.msn.com
Advanced Pollution Instrumentation, Inc. [Refer to Teledyne - Advanced Pollution Instrumentation, Inc.]	Horiba Instruments Incorporated 17671 Armstrong Avenue Irvine, CA 92714 (800) 446-7422 <a href="http://www.horiba.com">www.horiba.com</a>	Teledyne - Advanced Pollution Instrumentation, Inc. 6565 Nancy Ridge Drive San Diego, CA 92121-2251 (619) 657-9800 <a href="http://www.teledyne-api.com">www.teledyne-api.com</a>
Andersen Instruments 500 Technology Court Smyrna, GA 30082-9211 (800) 241-6898 <a href="http://www.anderseninstruments.com">www.anderseninstruments.com</a>	Lear Siegler [Refer to Monitor Labs, Inc.]	Teledyne Analytical Instruments 16830 Chestnut Street City of Industry, CA 91748 (626) 934-1622
ASARCO Incorporated 3422 South 700 West Salt Lake City, UT 84119 (801) 262-2459	Commonwealth of Massachusetts Department of Environmental Quality Engineering Tewksbury, MA 01876	Thermo Environmental Instruments, Inc. 8 West Forge Parkway Franklin, MA 02038 (508) 520-0430 <a href="http://www.thermoei.com">www.thermoei.com</a>
Beckman Instruments, Inc. Process Instruments Division 2500 Harbor Blvd. Fullerton, CA 92634 (714) 871-4848	Met One Instruments, Inc. 1600 Washington Blvd. Grants Pass, OR 97526 (541) 471-7111 <a href="http://www.metone.com">www.metone.com</a> (metone@metone.com)	Tisch Environmental, Inc. 145 S. Miami Avenue Village of Cleves, OH 45002 (513) 467-9000 <a href="http://www.tisch-env.com">www.tisch-env.com</a>
Bendix [Refer to ABB Process Analytics]	McMillan [Refer to Columbia Scientific Industries]	URG Corporation 116 Merritt Mill Road Chapel Hill, NC 27516 (919) 942-2753
BGI Incorporated 58 Guinan Street Waltham, MA 02451 (781) 891-9380 <a href="http://www.bgiusa.com">www.bgiusa.com</a> (bgiinc@attglobal.net)	Mine Safety Appliances 600 Penn Center Blvd. Pittsburgh, PA 15235-5810 (412) 273-5101	U.S. EPA National Exposure Research Laboratory Human Exposure & Atmospheric Sciences Division (MD-46) Research Triangle Park, NC 27711 (919) 541-2622 <a href="http://www.epa.gov/heasd">www.epa.gov/heasd</a>
Columbia Scientific Industries 11950 Jollyville Road Austin, TX 78759 (800) 531-5003	Monitor Labs, Inc. 74 Inverness Drive Englewood, CO 80112-5189 (800) 422-1499 <a href="http://www.monitorlabs.com">www.monitorlabs.com</a>	Wedding and Associates, Inc. [Refer to Thermo Environmental Instruments, Inc.]
Combustion Engineering [Refer to ABB Process Analytics]	Opsis AB, Furulund, Sweden Instruments also available from: Opsis, Inc. 146-148 Sound Beach Avenue Old Greenwich, CT 06870 (203) 698-1810 <a href="http://www.opsis.se">www.opsis.se</a>	
Dasibi Environmental Corp. 506 Paula Avenue Glendale, CA 91201 (818) 247-7601 <a href="http://www.dasibi.com">www.dasibi.com</a>	State of Oregon Department of Environmental Quality Air Quality Division 811 S.W. Sixth Avenue Portland, OR 97204	
DKK-TOA Corporation 29-10, 1-Chome, Takadanobaba, Shinjuku-ku Tokyo 169-8648, Japan <a href="http://www.toadkk.co.jp">www.toadkk.co.jp</a>	PCI Ozone Corp. One Fairfield Crescent West Caldwell, NJ 07006 (201) 575-7052 <a href="http://www.pci-wedeco.com">www.pci-wedeco.com</a>	
Environnement S.A 111, bd Robespierre 78300 Poissy, France <a href="http://www.environnement-sa.com">www.environnement-sa.com</a> Instruments also available from: Altech/Environnement U.S.A. 2623 Kaneville Court Geneva, IL 60134 (630) 262-4400 rbrown@altechusa.com	Phillips Electronic Instruments, Inc. 85 McKee Drive Mahwah, NJ 07430	Rupprecht & Patashnick Co., Inc. 25 Corporate Circle Albany, NY 12203 (518) 452-0065 <a href="http://www.rpcocom">www.rpcocom</a>
Envirronics, Inc. 69 Industrial Park Rd. E. Tolland, CT 06084-2805 (203) 429-0077 <a href="http://www.envirronics.com">www.envirronics.com</a>	Sibata Scientific Technology, Ltd. 1-25, 3-chome Ikenohata, Taito-ku Tokyo 110, Japan	

# U.S. EPA REFERENCE & EQUIVALENT METHODS FOR AMBIENT AIR

<u>Method</u>	<u>Designation Number</u>	<u>Method Code</u>	<u>Method</u>	<u>Designation Number</u>	<u>Method Code</u>
<b><u>SO<sub>2</sub> Manual Methods</u></b>					
Reference method (pararosaniline)	--	097	Beckman 866	RFCA-0876-012	012
Technicon I (pararosaniline)	EQS-0775-001	097	Bendix 8501-5CA	RFCA-0276-008	008
Technicon II (pararosaniline)	EQS-0775-002	097	Dasibi 3003	RFCA-0381-051	051
<b><u>SO<sub>2</sub> Analyzers</u></b>					
Advanced Pollution Instr. 100	EQSA-0990-077	077	Dasibi 3008	RFCA-0488-067	067
Advanced Pollution Instr. 100A/100AS	EQSA-0495-100	100	Environnement S.A CO11M	RFCA-0995-108	108
Asarco 500	EQSA-0877-024	024	Environnement S.A CO12M	FRCA-0206-147	147
Beckman 953	EQSA-0678-029	029	Horiba AQM-10, -11, -12	RFCA-1278-033	033
Bendix 8303	EQSA-1078-030	030	Horiba 300E/300SE	RFCA-1180-048	048
Columbia Scientific Industries 5700	EQSA-0494-095	095	Horiba APMA-360	RFCA-0895-106	106
Dasibi 4108	EQSA-1086-061	061	Lear Siegler or Monitor Labs ML9830, Monitor Labs ML9830B, Wedding 1020	RFCA-0992-088	088
DKK-TOA Corp. Model GFS-32	EQSA-0701-115	115	MASS - CO 1 (Massachusetts)	RFCA-1280-050	050
DKK-TOA Corp. Model GFS-112E	EQSA-0100-133	133	Monitor Labs 8310	RFCA-0979-041	041
Environnement S.A AF21M	EQSA-0292-084	084	Monitor Labs or Lear Siegler 8830	RFCA-0388-066	066
Environnement S.A AF22M	EQSA-0802-149	149	Monitor Labs ML9830/9830B, Wedding 1020	RFCA-0992-088	088
Environnement S.A. SANOA	EQSA-0400-138	138	MSA 202S	RFCA-0177-018	018
Horiba Model APSA-360/APSA-360ACE	EQSA-0197-114	114	Teledyne Advanced Pollution Instr. 300 or 300E	RFCA-1093-093	093
Lear Siegler AM2020	EQSA-1280-049	049	Thermo Electron or Thermo		
Lear Siegler SM1000	EQSA-1275-005	005	Environmental Instruments 48, 48C	RFCA-0981-054	054
Lear Siegler or Monitor Labs ML9850, Monitor Labs ML9850B, Wedding 1040	EQSA-0193-092	092			
Meloy SA185-2A	EQSA-1275-006	006			
Meloy SA285E	EQSA-1078-032	032			
Meloy SA700	EQSA-0580-046	046			
Monitor Labs 8450	EQSA-0876-013	513			
Monitor Labs or Lear Siegler 8850	EQSA-0779-039	039			
Monitor Labs or Lear Siegler 8850S	EQSA-0390-075	075			
Monitor Labs ML9850/9850B, Wedding 1040	EQSA-0193-092	092			
Opsis AR 500, System 300 (open path)	EQSA-0495-101	101			
Philips PW9700	EQSA-0876-011	511			
Philips PW9755	EQSA-0676-010	010			
Teledyne Analytical Instruments 6400A	EQSA-0495-100	100			
Thermo Electron 43	EQSA-0276-009	009			
Thermo Electron 43A or Thermo Environmental Instruments 43B, 43C	EQSA-0486-060	060			
<b><u>O<sub>3</sub> Analyzers</u></b>					
Advanced Pollution Instr. 400/400A/400E	EQOA-0992-087	087			
Beckman 950A	RFOA-0577-020	020			
Bendix 8002	RFOA-0176-007	007			
Columbia Scientific Industries 2000	RFOA-0279-036	036			
Dasibi 1003-AH, -PC, -RS	EQOA-0577-019	019			
Dasibi 1008-AH, -PC, -RS	EQOA-0383-056	056			
DKK-TOA Corp. Model GUX-113E	EQOA-0200-134	134			
Envirronics 300	EQOA-0990-078	078			
Environnement S.A O <sub>3</sub> 41M	EQOA-0895-105	105			
Environnement S.A O <sub>3</sub> 42M	EQOA-0206-148	148			
Environnement S.A SANOA	EQOA-0400-137	137			
Horiba APOA-360	EQOA-0196-112	112			
Lear Siegler or Monitor Labs ML9810, Monitor Labs ML9810B, Wedding 1010	EQOA-0193-091	091			
McMillan 1100-1	RFOA-1076-014	514			
McMillan 1100-2	RFOA-1076-015	515			
McMillan 1100-3	RFOA-1076-016	016			
Meloy OA325-2R	RFOA-1075-003	003			
Meloy OA350-2R	RFOA-1075-004	004			
Monitor Labs 8410E	RFOA-1176-017	017			
Monitor Labs or Lear Siegler 8810	EQOA-0881-053	053			
Monitor Labs ML9810/9810B, Wedding 1010	EQOA-0193-091	091			
Opsis AR 500, System 300 (open path)	EQOA-0495-103	103			
PCI Ozone Corp. LC-12	EQOA-0382-055	055			
Philips PW9771	EQOA-0777-023	023			
Teledyne - Advanced Pollution Instr. 400E	EQOA-0992-087	087			
Thermo Electron or Thermo Environmental Instruments 49, 49C	EQOA-0880-047	047			
<b><u>CO Analyzers</u></b>					
Beckman 866	RFCA-0876-012	012			
Bendix 8501-5CA	RFCA-0276-008	008			
Dasibi 3003	RFCA-0381-051	051			
Dasibi 3008	RFCA-0488-067	067			
Environnement S.A CO11M	RFCA-0995-108	108			
Environnement S.A CO12M	FRCA-0206-147	147			
Horiba AQM-10, -11, -12	RFCA-1278-033	033			
Horiba 300E/300SE	RFCA-1180-048	048			
Horiba APMA-360	RFCA-0895-106	106			
Lear Siegler or Monitor Labs ML9830, Monitor Labs ML9830B, Wedding 1020	RFCA-0992-088	088			
MASS - CO 1 (Massachusetts)	RFCA-1280-050	050			
Monitor Labs 8310	RFCA-0979-041	041			
Monitor Labs or Lear Siegler 8830	RFCA-0388-066	066			
Monitor Labs ML9830/9830B, Wedding 1020	RFCA-0992-088	088			
MSA 202S	RFCA-0177-018	018			
Teledyne Advanced Pollution Instr. 300 or 300E	RFCA-1093-093	093			
Thermo Electron or Thermo					
Environmental Instruments 48, 48C	RFCA-0981-054	054			
<b><u>NO<sub>x</sub> Manual Methods</u></b>					
Sodium arsenite (orifice)	EQN-1277-026	084			
Sodium arsenite/Technicon II	EQN-1277-027	084			
TGS-ANSA (orifice)	EQN-1277-028	098			
<b><u>NO<sub>x</sub> Analyzers</u></b>					
Advanced Pollution Instr. 200	RFNA-0691-082	082			
Advanced Pollution Instr. 200A/200AU	RFNA-1194-099	099			
Beckman 952A	RFNA-0179-034	034			
Bendix 8101-B	RFNA-0479-038	038			
Bendix 8101-C	RFNA-0777-022	022			
Columbia Scientific Indust.1600, 5600	RFNA-0977-025	025			
Dasibi 2108	RFNA-1192-089	089			
DKK-TOA Corp GLN-114E	RFNA-0798-121	121			
Environnement S.A. AC31M	RFNA-0795-104	104			
Environnement S.A. AC32M	RFNA-0202-146	146			
Environnement S.A. SANOA	RFNA-0400-139	139			
Horiba APNA-360	RFNA-0196-111	111			
Lear Siegler or Monitor Labs ML9841	RFNA-1292-090	090			
Meloy NA530R	RFNA-1078-031	031			
Monitor Labs 8440E	RFNA-0677-021	021			
Monitor Labs or Lear Siegler 8840	RFNA-0280-042	042			
Monitor Labs or Lear Siegler 8841	RFNA-0991-083	083			
Monitor Labs ML9841/A/B, Wedding 1030	RFNA-1292-090	090			
Opsis AR 500, System 300 (open path)	EQNA-0495-102	102			
Philips PW9762/02	RFNA-0879-040	040			
Teledyne Analytical Instruments 9110A	RFNA-1194-099	099			
Thermo Electron or Thermo Environmental Instruments 14B/E	RFNA-0179-035	035			
Thermo Electron or Thermo Environmental Instruments 14D/E	RFNA-0279-037	037			
Thermo Environmental Instr. 42, 42C	RFNA-1289-074	074			
<b><u>Pb Manual Methods</u></b>					
Reference method (hi-vol/AA spect.)	--	803			
Hi-vol/AA spect. (alt. extr.)	EQL-0380-043	043			
Hi-vol/Energy-disp XRF (TX ACB)	EQL-0783-058	058			
Hi-vol/Energy-disp XRF (NEA)	EQL-0589-072	072			
Hi-vol/Flameless AA (EMSL/EPA)	EQL-0380-044	044			
Hi-vol/Flameless AA (Houston)	EQL-0895-107	107			
Hi-vol/Flameless AA (Omaha)	EQL-0785-059	059			
Hi-vol/ICAP spect. (Doe Run Co.)	EQL-0196-113	113			
Hi-vol/ICAP spect. (EMSL/EPA)	EQL-0380-045	045			
Hi-vol/ICAP spect. (Illinois)	EQL-1193-094	094			
Hi-vol/ICAP spect. (Kansas)	EQL-0592-085	085			

## U.S. EPA REFERENCE & EQUIVALENT METHODS FOR AMBIENT AIR

<u>Method</u>	<u>Designation Number</u>	<u>Method Code</u>	<u>Method</u>	<u>Designation Number</u>	<u>Method Code</u>
Hi-vol/ICAP spect. (Montana)	EQL-0483-057	057			
Hi-vol/ICAP spect. (NE&T)	EQL-1188-069	069			
Hi-vol/ICAP spect. (New Hampshire)	EQL-1290-080	080			
Hi-vol/ICAP spect. (Pennsylvania)	EQL-0592-086	086			
Hi-vol/ICAP spect. (Pima Co.,AZ)	EQL-0995-109	109			
Hi-vol/ICAP spect. (Pima Co.,AZ)	EQL-0995-110	110			
Hi-vol/ICAP spect. (Rhode Island)	EQL-0888-068	068			
Hi-vol/ICAP spect. (Silver Val. Labs)	EQL-1288-070	070			
Hi-vol/ICAP spect. (TNRCC)	EQL-0400-140	140			
Hi-vol/ICAP spect. (West Virginia)	EQL-0694-096	096			
Hi-vol/WL-disp. XRF (CA A&IHL)	EQL-0581-052	052			
<b><u>PM<sub>10</sub> Samplers</u></b>					
Andersen Instruments RAAS10-100	RFPS-0699-130	130			
Andersen Instruments RAAS10-200	RFPS-0699-131	131			
Andersen Instruments RAAS10-300	RFPS-0699-132	132			
BGI Model PQ100	RFPS-1298-124	124			
BGI Model PQ200	RFPS-1298-125	125			
Oregon DEQ Medium volume sampler	RFPS-0389-071	071			
Rupprecht & Patashnick Partisol 2000	RFPS-0694-098	098			
R & P Partisol-FRM Model 2000	RFPS-1298-126	126			
R & P Partisol-Plus Model 2025 Seq.	RFPS-1298-127	127			
<b><u>PM<sub>10</sub> Samplers (continued)</u></b>					
Sierra-Andersen/GMW 1200	RFPS-1287-063	063			
Sierra-Andersen/GMW 321-B	RFPS-1287-064	064			
Sierra-Andersen/GMW 321-C	RFPS-1287-065	065			
Sierra-Andersen/GMW 241 Dichot.	RFPS-0789-073	073			
Tisch Environmental Model TE-6070	RFPS-0202-141	141			
W&A/Thermo Electron Mod 600 HVL	RFPS-1087-062	062			
<b><u>PM<sub>10</sub> Analyzers</u></b>					
Andersen Instruments Beta FH62I-N	EQPM-0990-076	076			
Met One BAM1020, GBAM1020, BAM1020-1, GBAM1020-1	EQPM-0798-122	122			
R & P TEOM 1400, 1400a	EQPM-1090-079	079			
W&A/Thermo Electron 650 Beta Gauge	EQPM-0391-081	081			
<b><u>PM<sub>2.5</sub> Samplers</u></b>					
Andersen Model RAAS2.5-200 Audit	RFPS-0299-128	128			
BGI PQ200/200A	RFPS-0498-116	116			
BGI PQ200-VSCC or PQ200A-VSCC	EQPM-0202-142	142			
Graseby Andersen RAAS2.5-100	RFPS-0598-119	119			
Graseby Andersen RAAS2.5-300	RFPS-0598-120	120			
R & P Partisol-FRM 2000 PM-2.5	RFPS-0498-117	117			
R & P Partisol-FRM 2000 PM-2.5 FEM	EQPM-0202-143	143			
R & P Partisol 2000 PM-2.5 Audit	RFPS-0499-129	129			
R & P Partisol 2000 PM-2.5 FEM Audit	EQPM-0202-144	144			
R & P Partisol-Plus 2025 PM-2.5 Seq.	RFPS-0498-118	118			
R & P Partisol-Plus 2025 PM-2.5 FEM Seq.	EQPM-0202-145	145			
Thermo Environmental Model 605 CAPS	RFPS-1098-123	123			
URG-MASS100	RFPS-0400-135	135			
URG-MASS300	RFPS-0400-136	136			
<b><u>TSP Manual Method</u></b>					
Reference method (high-volume)	--		802		